

**Project Charter Document**



**Project Name:**  Wind Turbine Failure

**Department:** Analytics Team

**Focus Area:** Business understanding, data understanding, data preparation, data visualization

**Process:** CRISP-ML(Q) – Cross Industry Standard Process for Machine Learning with Quality Assurance, data visualization



**Prepared By**

|  |  |
| --- | --- |
| **Document Owner(s)** | **Project/Organization Role** |
| Joo Zhin Mei (Nancssee) | Intern |
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# Project Charter Version Control

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| --- | --- | --- | --- |
| **Version** | **Date** | **Author** | **Change Description** |
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**Confidential**

Document1

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# TABLE OF CONTENTS

1. **PROJECT CHARTER PURPOSE 3**
2. **PROJECT EXECUTIVE SUMMARY 3**
3. **PROJECT OVERVIEW 3**
4. **PROJECT SCOPE 3**
   1. Goals and Objectives 3
   2. Departmental Statements of Work (SOW) 3
   3. Organizational Impacts 3
   4. Project Deliverables 3
   5. Deliverables Out of Scope 3
   6. Project Estimated Costs & Duration 3
5. **PROJECT CONDITIONS 3**
   1. Project Assumptions 3
   2. Project Issues 3
   3. Project Risks 3
   4. Project Constraints 3
6. **PROJECT STRUCTURE APPROACH 3**
7. **PROJECT TEAM ORGANIZATION PLANS 3**
8. **PROJECT REFERENCES 3**
9. **APPROVALS 3**
10. **APPENDICES 3**
    1. Document Guidelines 3
    2. Project Charter Document Sections Omitted 3

# 1 PROJECT CHARTER PURPOSE



# 2 PROJECT EXECUTIVE SUMMARY

* project goals
* objectives
* scope
* assumptions
* risk
* timeline
* approach
* organization



# 3 PROJECT OVERVIEW



# 4 PROJECT SCOPE

## 4.1 Goals and Objectives

|  |  |
| --- | --- |
| **Goals** | **Objectives** |
| Wind turbine predictive maintenance. | 1. Minimize wind turbine unplanned failure. 2. Minimize wind turbine repair cost. 3. Maximize wind turbine service life. 4. Minimize wind turbine maintenance time. |

## 4.2 Departmental Statements of Work (SOW)

|  |  |  |
| --- | --- | --- |
| **Departmental SOW** | **Owner/Prime** | **Due Date/Sequence** |
| Business understanding | Joo Zhin Mei (Nancssee) | 14/12/2023 |
| Exploratory data analysis (EDA) | Joo Zhin Mei (Nancssee) | 15/12/2023 |
| Data cleaning/preparation | Joo Zhin Mei (Nancssee) | 18/12/2023 |
| Power BI data visualization | Joo Zhin Mei (Nancssee) | 20/12/2023 |
|  |  |  |

## 4.3 Organizational Impacts

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| --- | --- |
| **Organization** | **Impact to and Participation of**  **Organization** |
|  |  |
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## 4.4 Project Deliverables

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| --- | --- |
| **Milestone** | **Deliverable** |
| 1. Business Understanding | ● Define business problem, objectives, constraints and success criteria. |
| 2. EDA | ● Exploratory data analysis on data including the four business moments and graphs analysis. |
| 3. Data Cleaning/Preparation | ● Clean and pre-process data with:  1) Winsorization - IQR method  2) Transformation - Yeo-Johnson  3) Scaling - normalization: min-max scaling (range method) |
| 4. Power BI Data Visualization | ● Create visualization reports and dashboard to study relationship between variables and wind turbine failure. |

**4.5 Deliverables Out of Scope**

## 4.6 Project Estimated Duration

|  |  |  |  |
| --- | --- | --- | --- |
| **Project**  **Milestone** | **Date**  **Estimate** | **Deliverable(s) Included** | **Confidence Level** |
| Business Understanding | 14/12/2023 | Business problem, objectives, constraints and success criteria. | Moderate |
| EDA | 15/12/2023 | Exploratory data analysis: The four business moments and graphs analysis. | Moderate |
| Data Cleaning/Preparation | 18/12/2023 | Cleaned and pre-processed data | Low |
| Power BI Data Visualization | 20/12/2023 | Visualizations report & dashboard. | Low |



# 5 PROJECT CONDITIONS

**5.1 Project Assumptions**

## 5.2 Project Issues

**Priority Criteria**

1. − High-priority/critical-path issue; requires immediate follow-up and resolution.
2. − Medium-priority issue; requires follow-up before completion of next project milestone.
3. − Low-priority issue; to be resolved prior to project completion.
4. − Closed issue.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **#** | **Date** | **Priority** | **Owner** | **Description** | **Status & Resolution** |
| 1 | 20/12/23 | 4 | Joo Zhin Mei (Nancssee) | Unsure about correct visualization charts for data presentation. | Solved by consulting the project advisor. |

## 5.3 Project Risks

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| --- | --- | --- | --- | --- |
| **#** | **Risk Area** | **Likelihood** | **Risk**  **Owner** | **Project Impact-Mitigation**  **Plan** |
| 1 | Data integrity | High | Joo Zhin Mei (Nancssee) | 1. Consult the expert during preparation process. 2. Searching online for help and solutions. |
| 2 | Inaccurate Data Visualization | High | Joo Zhin Mei (Nancssee) | 1. Consult the expert during preparation process. 2. Searching online for help and solutions. |

## 5.4 Project Constraints

1) Lack of newer wind turbine facilities.



# 6 Project Team Organization Plans

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| --- | --- | --- |
| **Project Team Role** | **Project Team Member(s)** | **Responsibilities** |
| Data analytic intern | Joo Zhin Mei (Nancssee) | Business understanding, EDA, data cleaning/preparation, Power BI data visualization. |
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# 7 PROJECT REFERENCES

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| --- | --- |
| **Milestone** | **Deliverable** |
| Business Understanding | 1. Mr. Shiv (Project Consultant) 2. Searching online for help and solutions. 3. Wind Turbine Failures - Tackling current Problems in Failure Data Analysis   <https://iopscience.iop.org/article/10.1088/1742-6596/753/7/072027/meta>   1. Study of weather and location effects on wind turbine failure rates   <https://onlinelibrary.wiley.com/doi/epdf/10.1002/we.538>   1. Feature Selection Algorithms for Wind Turbine Failure Prediction   https://www.mdpi.com/1996-1073/12/3/453#B3-energies-12-00453 |
| EDA | 1. Mr. Shiv (Project Consultant) 2. Searching online for help and solutions. |
| Data Cleaning/Preparation | 1. Mr. Shiv (Project Consultant) 2. Searching online for help and solutions. |
| Power BI Data Visualization | 1. Mr. Shiv (Project Consultant) 2. Searching online for help and solutions. |

# 8 APPROVALS

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| --- | --- |
| **Prepared by** | \_\_\_\_Deeksha\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Project Manager |
| **Approved by** | Sharat |

Project Sponsor

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Executive Sponsor

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Client Sponsor



# 9 APPENDICES

**9.1 Document Guidelines**

## 9.2 Project Charter Document Sections Omitted

